

REPORT ON THE PROGRESS OF THE DEPARTMENT'S REVIEW OF THE PROPOSED CRANDON MINE & OTHER MINING ISSUES: April 1998

Department of Natural Resources
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What's New? A lot has happened since we mailed our last progress report to you in December: Exxon sold its share of the project to Rio Algom, the Crandon Mining Company changed its name to the Nicolet Minerals Company and there are some new studies planned by the company. We are making progress on our groundwater flow model and in writing the draft environmental impact statement, and we present a revised schedule in this status report. In other mining-related issues, the Senate and Assembly have agreed on the mining moratorium bill, and the Governor has said he will sign it in April. Our goal is to keep you informed on the Crandon Project as well as other mining-related events. As always, contact us at the mailing or E-mail addresses at the end of this report if you have questions or concerns or if you need additional project information.

Rio Algom Purchases Exxon's 50% Share and Changes Company Name: Early this year Rio Algom Limited announced that it had purchased from Exxon Minerals Company its 50% share of the company. That made Rio Algom the sole owner and operator of the Crandon Project, although Exxon Minerals Company reportedly retained a 2½% profit royalty should the project begin production. Shortly after that announcement, the name of the Crandon Mining Company was changed to the Nicolet Minerals Company (NMC). Although the company has been renamed, we still refer to the project as the Crandon Project. The ownership and name changes will have little effect on how the Department conducts its review of the proposed mine because the new management can simply continue the permitting efforts and studies begun by the former management. However, NMC has just disclosed that it will re-examine two aspects of the proposal that, if implemented, have the potential to significantly reduce environmental impacts.

Re-examining Two Aspects of the Proposal: NMC met with Department representatives in March to describe two new areas of investigation for the proposed mine: 1) separation of pyrite from the tailings for disposal in the underground mine, and 2) more complete grouting of the ore body to reduce mine inflow. Grouting is a frequently used technique to make soils or bedrock less permeable to water, and it would be accomplished by pumping a thick slurry, such as cement or clay, into the weathered bedrock. The grout would fill the cracks and voids, reducing water movement. Here is a brief summary of what the company representatives described and what they hope to accomplish:

Separation of Pyrite: The company has collected a representative sample of ore body core, and a lab currently is conducting tests on separating the pyrite. The separation would be a process similar to the concentration of copper, zinc and lead minerals proposed for the mine. It is the pyrite which contains almost all of the sulfides that would be produced by the mine. The environmental concern for pyrite revolves around its potential to oxidize and form acid. Tests will be conducted on the resulting pyrite concentrate as well as on the tailings remaining after separation to determine concentration efficiency and its chemical characteristics. By conducting these studies, the company seeks to demonstrate that the non-pyrite tailings that would be deposited in the tailings management area would be either non-acid-producing or would have only a limited ability to produce acid. If this were economically and technically feasible, the pyrite concentrate would be backfilled underground in the mine. Following cessation of mining, the mine would re-flood, leaving the backfilled pyrite under water. The potential for pyrite oxidation, and the production of acid, under water is greatly reduced due to the limited availability of oxygen.

More Complete Grouting Over the Ore Body: NMC will evaluate the feasibility of more complete grouting over the ore body as a way to reduce the amount of water that would seep into the mine from the overlying glacial aquifer. If testing indicates that such grouting would be cost effective and could significantly reduce mine inflow, the company may revise its mining plan to include more complete grouting. If grouting is shown to be effective, the predicted groundwater drawdown might be significantly reduced. This would result in fewer impacts to surface waters and wetlands and a potentially scaled down surface water mitigation plan. In addition, the company would have a smaller amount of wastewater to treat and discharge, allowing it to explore alternative means of wastewater treatment and disposal. For instance, the company may propose to dispose of its wastewater in on-site seepage ponds, eliminating the inter-basin transfer of water from the proposed Wisconsin River discharge. The company is planning to evaluate the efficiency of grouting through a test program on the project site. Testing the effectiveness of grouting would involve pumping water from a project-site well prior to and after grouting the surrounding area through several boreholes.

Relationship to Ongoing Environmental Impact Statement Development: NMC emphasized in March that it has not decided to pursue these potential changes in its plan, but will study them first. The Department cannot require the company to choose either of these alternatives, but must evaluate the proposal for compliance with environmental protection requirements. The company wants to make a decision on whether to proceed further with either of these two alternatives by May. Until then the Department will continue to work on the Draft Environmental Impact Statement (DEIS) utilizing the current proposals presented by the company.

Decision-Maker Announced: In January, Department Secretary George Meyer designated the Division of Hearings and Appeals, attached to the Department of Administration, as the decision-maker at the master hearing on the mining-related permits and approvals requested by the company. This means that the administrative law judge that conducts the Master Hearing decides whether to grant or deny the permits. The decision will be made based on the hearing record developed during the Master Hearing. The decision on the Flambeau Mine was made in the same manner.

Senate and Assembly Agree on Mining Moratorium Bill: The Legislature has passed the so called mining moratorium bill, and the Governor has stated publicly that he will sign the bill later in April. Following its expected final approval, the Department will begin drafting administrative rules to clarify language in the bill and implement its provisions. The final decision on whether the company has found mining sites that comply with the requirements in the bill will be made by the administrative law judge following the master hearing. There is nothing in the new law that halts the mining review process, so our work on all phases of the project, including preparation of our DEIS, will continue.

Groundwater Modeling Update: The Department, with the assistance of its consultants, has begun its review of what we understand to be the mining company's final version of the groundwater flow model, which was submitted in February of 1998 with an errata report submitted in March of 1998. The flow model is intended to help us understand the direction and rate of groundwater movement and the interaction between groundwater and the surface waters in lakes, streams, wetlands and springs. We are carefully looking at the construction of the model, the model inputs, and the computation/numerical issues to make sure that the submitted model is an accurate representation of the natural system in the area of the project. In the process of reviewing the model, we are identifying areas where we believe additional analysis or modifications are necessary. We will then be implementing those analyses and modifications to produce our version of the model for purposes of projecting impacts for the DEIS and permit reviews.

We have requested that the mining company provide us with a revised bedrock representation which it is currently preparing for its internal use. The company is preparing this revision as a part of an assessment of the potential for including the actual operations of the mine in the model. In order to be conservative, the model currently assumes that the mine is fully excavated on the first day of operations, stays un-backfilled for the duration of mining, and that the grouting that will be necessary for mine operation will not significantly reduce water inflow. Making the model more closely reflect actual mining operations is expected to lead to a reduction in predicted mine inflow. Should the company choose to include these changes in its project proposal, the company would then submit revisions to the Mining Plan and a revised groundwater flow model. Regardless of the company's decision on project revisions, we will be incorporating the enhanced bedrock representation into our modified version of the model.

The mining company is in the process of revising the solute (liquid contaminant) transport model that was submitted in November 1996. We expect to receive that revision soon. The transport model is designed to help us evaluate the impacts of potential contaminants that would leak from the waste disposal facility and the abandoned underground mine. Since the solute transport modeling is based on the flow model, we have not fully reviewed the transport model. Once we determine that we have an acceptable flow model, then we will begin our detailed review of the solute transport model.

Revised Project Schedule: In December we prepared an updated version of our project review schedule. The following schedule shows the sequence and approximate duration of events for the remainder of the Crandon project. All of the events in the following schedule are referenced to the future time (X) when the Department has received all of the necessary studies and data from the Nicolet Minerals Company and has verified them to be complete and acceptable. At this time we cannot evaluate the potential changes to the schedule should the company implement project changes.

- X + 4 months - DNR will release its DEIS on the proposed mining project no more than 4 months after receiving and verifying all necessary data and studies from the Nicolet Minerals Company.
- X + 6 Months - DNR will hold an informational hearing in the project area about 2 months after release of the DEIS.
- X + 10 Months - DNR will release the final EIS (FEIS) on the proposed mine about 4 months after the informational hearing.
- X + 16 Months - The master hearing will start an estimated 6 months after the release of the FEIS. The purposes of the master hearing are to decide if the FEIS is adequate and to provide an opportunity for parties to contest the proposed approval or denial of each of the permits and approvals.
- X + 19 Months - The master hearing and the transcript preparation will take an estimated 3 months to complete.
- X + 23 Months - The administrative law judge will receive all legal briefs on key issues from the parties and then stops taking additional information on the project.
- X + 26 Months - Three months after completing the information gathering, the administrative law judge will release the final written decision.

Wisconsin Science Advisory Council on Metallic Mining: The Wisconsin Science Advisory Council on Metallic Mining was created last year by the Governor's executive order to advise the Department of Natural Resources as follows:

- Identify the technologies that are effective in preventing or eliminating environmental degradation from metallic ore mining operations;
- Review, on a site-specific basis, proposed metallic ore mining operations in this state and determine the effectiveness and feasibility of implementing technologies to reduce or eliminate environmental impacts, such as acid drainage and the release of heavy metals from the tailings site and the proposed metallic ore mining operations;
- Formulate and submit recommendations to the Secretary of the Department of Natural Resources concerning technology that would ensure compliance by metallic ore mining operations with state groundwater and surface water regulations and confirm that any proposed metallic ore mining operation would utilize these technologies.

Secretary Meyer appointed the five Council members, all of whom are from Wisconsin universities. The Council has met several times to gather information on the mining proposal, and it is not expected to have recommendations for the Department until later this year. Recommendations from the Council will be included in our environmental impact statement.

The Council was asked recently by the Governor to comment on the mining moratorium bill passed by the Assembly and Senate. The meeting minutes indicate that the Council identifies its charge to be related to science and technology, not policy, and therefore had no comment.

A History of the Crandon Project Review: The following brief history of the Crandon Project review highlights the major events beginning in 1969 when Exxon Coal & Minerals Company began mineral exploration. Certainly there will be many additional entries to the history before the project is over!

1969	Exxon Coal & Minerals Company began mineral exploration in northern Wisconsin.
1974	A geologic anomaly was detected by an airborne electromagnetic survey south of Crandon.
1975	Exploratory drilling began, and several months later ore was discovered.
1976	Exxon formally announced the discovery of its zinc, copper and lead ore body.
1978	Exxon submitted its Notification of Intent to DNR, indicating its intent to collect data and conduct studies in support of a mining permit application.
1982	Exxon submitted its major design, engineering and environmental study documents along with the required permit applications.
1985	The company redesigned its mining proposal and submitted revised environmental documents and permit applications.

May 1986	DNR released its draft environmental impact statement (DEIS) for public review.
Nov 1986	DNR released its final EIS (FEIS) and began preparations for the master hearing.
Dec 1986	Exxon withdrew its permit applications, citing poor metals prices, and indefinitely suspended project activity.
Aug 1992	Exxon announced it had reached an agreement with Phelps Dodge Mining Company to conduct a joint evaluation of the Crandon deposit and initiate communications with DNR. Several months later Phelps Dodge withdrew from further action.
Sept 1993	Exxon and Rio Algom, Ltd. announced formation of the Crandon Mining Company, a Wisconsin partnership, that would seek to develop the project.
Sept 1993 to Feb 1994	The Crandon Mining Company began additional project site evaluations, hired consultants and initiated discussions with DNR.
Feb 1994	The company submitted its Notification of Intent to collect data, which started DNR's official regulatory review of the proposed project.
Apr 1994	DNR held a hearing on the company's Notification of Intent and Scope of Study.
1994 to Present	The company conducted technical discussions with DNR staff and consultants on project engineering and design issues, environmental studies, data gathering and verification. As sufficient information became available, the DNR began preparing its DEIS. The DNR hired more than 20 technical consultants to help with project review and evaluation.
May 1995	The Crandon Mining Company submitted its environmental impact report and the first of its permit applications and technical studies.
June 1995 to Present	The company began providing periodic updates to its environmental impact report and permit applications.
Nov 1995	The US Army Corps of Engineers determined that it would prepare a separate environmental impact statement on the proposed mine and began independent evaluations on groundwater modeling, predictions of contaminant movement, and surface water quality and quantity issues.
May 1996	DNR held a public meeting in Tomahawk to discuss wastewater issues relating to the proposed discharge of treated wastewater to the Wisconsin River.
April to July 1997	DNR held 7 informational meetings across northern Wisconsin (Wausau, Green Bay, Tomahawk, Rhinelander, Crandon, New London and Town of Ainsworth) to receive public comments on the proposal and to respond to public concerns. Meeting summaries were distributed following the meetings.
1997	The Crandon Mining Company negotiated local agreement approvals with Forest County, the City of Crandon, and the Towns of Lincoln and Nashville for its proposed mining project. Additional local approvals are required.

- Dec 1997 The DNR revised its project review schedule to reflect the status of ongoing studies on groundwater, contaminant movement and surface waters. The DEIS will be released no more than 4 months after all required studies and data are received and verified as acceptable.
- Jan 1998 Secretary George Meyer announced that the final decision on the project will be made by an administrative law judge appointed by the State Division of Hearings & Appeals. The written decision will be made following the master hearing process.
- Jan 1998 Rio Algom, Limited, purchased the 50% share of the project owned by Exxon Minerals Company, and the Crandon Mining Company changed its name to the Nicolet Minerals Company.
- Mar 1998 Nicolet Minerals Company announced it will study potential changes to its mining plan, including concentration of pyrite and more grouting over the ore body to reduce mine inflow.

The most comprehensive explanation of mining regulation is found in *An Overview of Metallic Mineral Regulation* in Wisconsin by Thomas Evans. It was published as Special Report 13 (revised in 1996) by the Wisconsin Geological & Natural History Survey, Madison, and can be ordered by calling (608) 262-1705.

For More Information on the Department's Crandon Project Regulatory Review:

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